Superfund Records Center
SITE: SUTION BROOK
BREAK: 11.09
OTHER: 18773



MATERIAL SAFETY DATA SHEET

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind expressed or implied is made with respect to the information contained herein.

SECTION 1.

TRADE NAME F resin	CHEMICAL NAME	
CHEMICAL FAMILY Filled Epoxy Resin	FORMULA Mixture	

SECTION 2. HAZARDOUS INGREDIENTS

INGREDIENTS	NATURE OF HAZARD	*	TLV (UNITS)
Epoxy resin	Mild skin irritant	30	n.a.

SECTION 3. PHYSICAL DATA

BOILING POINT (OF.)	n.a.	SOLUBILITY IN WATER	Nil
MELTING POINT (°F.)	n.a.	SPECIFIC GRAVITY	1.92
VAPOR PRESSURE (mm Hg.)	Nil at 78°F	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)	n.a	EVAPORATION RATE (BuAc = 1)	n.a.
APPEARANCE AND ODOR	CEAND ODOR Dark grey paste, low odor		

SECTION 4. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (OF.) (Method Used)	400 ^O F	(TOC)	Resin	FLAMMABL	E LIMITS IN AIR	n.a.	n.a.
EXTINGUISHING MEDIA	CO ₂ or	dry ch	nemicals,	polymer	foams for	large f	ires
SPECIAL FIRE FIGHTING PROCEDUR							,
	Avoid 1	breathi	ng smoke				į
UNUSUAL FIRE AND EXPLOSION HA	ZARDS						
•	None						

SECTION 5. REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	\mathbf{x}	Open flame or excessive heat
INCOMPATIBILITY	Materials to Avoid)	Strong oxidizers
HAZARDOUS DECO	MPOSITION PROD	OUCT:	Oxides of carbon, nitrogen, aldehydes & acids
HAZARDOUS	MAY OCCUR	Ī	CONDITIONS TO AVOID
POLYMERIZATION	WILL NOT OCC	UR	X Heat generated when mixed with epoxy hardener.

Use caution when mixing large quantities.

SECTION 6. HEALTH HAZARD DATA

ORAL LDSO	11.4 gm/kg for epoxy resin	
DEPMAL LDSO	unknown	
II FATION SKIN	minor irritation	
SENSITIZATION SKIN	may be a sensitizer	
EYE	minor eye irritation	
THRESHOLD LIMIT VALUE	n.a.	
RESPIRATORY	n.a.	
EFFEOTS OF OVEREXPOSURE	Skin irritation	
	Potential skin sensitizer. Prolonged or repeated	
contact may cause skin irritation.		
EMERGENCY & FIRST AID PROCED	URES	
	Skin: Remove with warm soapy water	
	Eyes: Flush with clear water for 15 minutes.	
	Contact a physician.	
	Inhalation: Remove person to fresh air.	

SECTION 7. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MA	TERIAL IS RELEASED OR SPILLED
	Avoid skin contact. Absorb with sweeping compound or other absorbent material and dispose of.
WASTE DISPOSAL METHOD	Bury in approved chemical landfill or in accordance with state and federal regulations.

SECTION 8. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Se	None in normal use
PROTECTIVE CLOTHING	Rubber or disposable gloves.
EYE PROTECTION	Recommended
VENTILATION	Local exhaust when used with hardener.

SECTION	9. SPECIAL PRECA	AUTIONS
PRECAUTIONS	TO BE TAKEN IN HANDLING, S	TORING, ETC.
	Use	with adequate ventilation.
		id skin contact.
		re in a cool dry place.
	Han	dle in accordance with hazardous potentialities of curing agent when mixed therewith.
DOT HAZAR	D CLASS -	2
DATE	7/21/81	SIGNATURE Sand C Rugge
Revised from Form (OSHA-20 in compliance with the guideline	re set form by OSHA for sessentially similar form C. Briggs-Dir of Research USA

maint - all Lights

Health	1
Flammability	2
Reactivity	1
Personal Protection	A

BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

Health	1
Flammability	2
Reactivity	1
Specific Hazard	

HMIS Ratings

SECTION I

NEPA Ratings

HMIS Hatings	NFPA Hatings
PRODUCT NAME FSA ADHESIVE	BOWMAN PART NO. 21990, 21991 (page 1 of 2)
SUPPLIER Bowman Distribution, Barnes Group Inc.	EMERGENCY TELEPHONE NO. (216) 391-7206
ADDRESS 850 East 72nd Street, Cleveland, OH 44103	DATE 10/3/88
HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING NA DOT-not regulated, IATA-not regulated, ORM-	· · · · · · · · · · · · · · · · · · ·
ADDITIONAL HAZARD CLASSES (as applicable) None	
CHEMICAL FAMILY Ethyl-2-Cyanoacrylate ester	FORMULA CH ₂ = C(CN)COOCH ₂ CH ₇

SECTION II - HAZARDOUS INGREDIENTS

			OFOLIOITI LIVEVIIDO	,		<u> </u>	
CAS REGISTRY NUMBER	%W	%∨	CHEMICAL NAME(S)	OSHA PEL	ACGIH TLV	Other Limits	Listed as Carcinogen NTP, IARC or OSHA 1910(z) (specify)
7085-85-0	90		Ethyl-2-cyanoacrylate	N.E.	N.E.	2-5 ppm	No
	 						·
			Remaining ingredients not hazardous				
			or less than 1% wt.				
					ļ		ļ
	<u> </u>						<u> </u>
		L			L	<u> </u>	<u></u>

SECTION III - PHYSICAL DATA

BOILING POINT 149° F	 ດໍ	SPECIFIC GRAVITY (H ₂ O = 1)	1.07		
VAPOR PRESSURE 11 @ —_ °F —29 °C ☐ mm Hg	☐ psi	PERCENT VOLATILE BY VOLUME (%)	0	PERCENT SOLID BY WEIGHT (%)	100
VAPOR DENSITY (AIR = 1) less than	4	EVAPORATION RATE (= 1)	N.E.		
SOLUBILITY IN WATER	insolubie	pH =	N.E.		
APPEARANCE AND ODOR Transparent water-white still	mulative			MATERIAL IS: LIQUID	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	method used	FLAMMABLE LIMITS	LEL	UEL
	°C TCC	N.E.	N.E.	N.E.
EXTINGUISHING MEDIA				
Flush with large quantities	s of water or a dry chemical	l extinguisher.		
SPECIAL FIRE FIGHTING PR	OCEDURES			
Same as above				
UNUSUAL FIRE AND EXPLO	SION HAZARDS			
Same as above				
Ī				

21990, 21991 (page 1 of 2)

C-8/8

			. — INCLUDE TARGET ORGA igly, irritates eyes, mucous me		nic - none reported. Non-carcinogenic.
CONDITIONS					
Higher than 17	6° F. temperature	of heat, mois	ture and alkaline material.		
	MPTOMS OF O		RE		
	TES OF ENTRY		Skin Contact Other (s	pecify)	
	AND FIRST AID ir. Ingestion - inc			ith water quick	ly careful to not force tissues strongly bonded as this wi
e rejected with	h time.	_			
	IDITIONS AGGF e, skin and respi		XPOSURE rs may be aggravated.		
		SI	ECTION VI - RE	ACTIVIT	TY DATA
TABILITY	UNSTABLE		ITIONS TO AVOID than 176° F temperature heat	moisture and a	Ikalines.
	STABLE		22°F store in cool area.		
olymerized by	LITY (materials t water, alcohols,	, amines and a			
AZARDOUS I ypical combu	DECOMPOSITION Products of	CO, CO, and	nitrogen oxides.		
IAZARDOUS		MAY OCCU			
OLYMERIZAT	ION	WILL NOT	OCCUR X Store in a co	ol area.	
			N VII - SPILL OI	RLEAK	PROCEDURES
	TAKEN IN CASE	MATERIAL IS	N VII - SPILL OI S RELEASED OR SPILLED react liquid with water to wast		PROCEDURES
bsorb with tis	TAKEN IN CASE sue/paper or clo	MATERIAL IS	RELEASED OR SPILLED		PROCEDURES
VASTE DISPO	TAKEN IN CASE sue/paper or clo SAL METHOD	MATERIAL IS th towels and	RELEASED OR SPILLED		PROCEDURES
VASTE DISPO	TAKEN IN CASE sue/paper or clo SAL METHOD ump solid waste	MATERIAL IS th towels and i	S RELEASED OR SPILLED react liquid with water to wast mater to wast mical waste for treatment.		PROCEDURES
VASTE DISPO	TAKEN IN CASE sue/paper or clo SAL METHOD	MATERIAL IS th towels and as plastic cher ABLE QUANT	S RELEASED OR SPILLED react fiquid with water to wast mical waste for treatment.		PROCEDURES
VASTE DISPO	TAKEN IN CASE sue/paper or clos SAL METHOD ump solid waste erfund) REPORT.	MATERIAL IS th towels and as plastic cher ABLE QUANT to EPA and lo	S RELEASED OR SPILLED react liquid with water to wast mical waste for treatment. ITY (in lbs) cal regulations.		PROCEDURES
ASTE DISPO	TAKEN IN CASE sue/paper or clo SAL METHOD ump solid waste erfund) REPORT ierate according DOUS WASTE No	as plastic cher ABLE QUANT to EPA and to	S RELEASED OR SPILLED react liquid with water to wast mical waste for treatment. ITY (in ibs) cal regulations.		
VASTE DISPO noinerate or di ERCLA (Supe andfill or Incir CRA HAZARI I.E.	TAKEN IN CASE sue/paper or clo SAL METHOD ump solid waste erfund) REPORT ierate according DOUS WASTE No	as plastic cher ABLE QUANT to EPA and to	S RELEASED OR SPILLED react liquid with water to wast mical waste for treatment. ITY (in ibs) cal regulations. 1.33)	•.	Α.
VASTE DISPO noinerate or di ERCLA (Supe andfill or Incir CRA HAZARI I.E. OLATILE ORG s packaged, r N.E. (100	SAL METHOD ump solid waste serfund) REPORT. serfund REPORT. serate according DOUS WASTE Not GANIC COMPOUNIOUS water) % solids) SECT	as plastic cher ABLE QUANT to EPA and lo O. (40 CFR 26	RELEASED OR SPILLED react fiquid with water to wast mical waste for treatment. ITY (in ibs) cal regulations. 1.33) Theoretical	lb/gal N.A	Α.
ERCLA (Super andfill or incire CRA HAZARE. OLATILE ORC. IS packaged, r N.E. (100)	SAL METHOD ump solid waste a coording DOUS WASTE No GANIC COMPOUNISM SOLIDS SECT	as plastic cher ABLE QUANT to EPA and to O. (40 CFR 26 UND (VOC)	RELEASED OR SPILLED react fiquid with water to wast mical waste for treatment. ITY (in ibs) cal regulations. 1.33) Theoretical	ib/gai N.A b/gai N.A	A.
ERCLA (Super andfill or incire CRA HAZARE. OLATILE ORC. IS packaged, r N.E. (100)	SAL METHOD ump solid waste a coording DOUS WASTE No GANIC COMPOUNISM SOLIDS SECT	ABLE QUANT to EPA and to O. (40 CFR 26 UND (VOC) ION VII (specify type)	SRELEASED OR SPILLED react liquid with water to wast mical waste for treatment. ITY (in ibs) cal regulations. 1.33) Theoretical	ib/gai N.A b/gai N.A	ON INFORMATION
ASTE DISPO ICINETATE OF ICINETATE OF ICINETATE CRA HAZARD I.E. OLATILE ORD IS PACKAGED, I.E. (100) ESPIRATORY ARBON disc ma	SAL METHOD amp solid waste a coording DOUS WASTE No GANIC COMPOUNISM SOLIDS SECT	as plastic cher ABLE QUANT to EPA and to O. (40 CFR 26 UND (VOC) ION VII (specify type) hery at TLV's b	RELEASED OR SPILLED react liquid with water to wast mical waste for treatment. ITY (in ibs) cal regulations. 1.33) Theoretical	ib/gai N.A b/gai N.A	ON INFORMATION SPECIAL Normally not required.
ERCLA (Superandill) or incircondillo or	TAKEN IN CASE sue/paper or clo SAL METHOD ump solid waste a erfund) REPORT. lerate according DOUS WASTE No GANIC COMPOR ninus water) % solids) SECT PROTECTION lask or not necess	ABLE QUANT to EPA and to O. (40 CFR 26 UND (VOC) ION VII (specify type) the part of the true of true	RELEASED OR SPILLED react liquid with water to wast micel waste for treatment. ITY (in ibs) cal regulations. 1.33) Theoretical	ib/gai N.A D/gai N.A OTECTI range).	SPECIAL Normally not required. OTHER Normally not required.
ERCLA (Superandill) or incircon HAZARD (Section 1997) arbon disc materials of the control of the	TAKEN IN CASE sue/paper or clos SAL METHOD amp solid waste a rfund) REPORT ierate according DOUS WASTE No GANIC COMPOUNIOUS water) % solids) SECT PROTECTION ask or not necess GLOVES (specify	ABLE QUANT to EPA and to O. (40 CFR 26 UND (VOC) ION VII (specify type) sary at TLV's b	RELEASED OR SPILLED react liquid with water to wast mical waste for treatment. ITY (in ibs) cal regulations. 1.33) Theoretical	e. lb/gai N.Ab/gai N.A OTECTI range).	SPECIAL Normally not required. OTHER
VASTE DISPO CERCLA (Supe andfill or incir CRA HAZARE U.E. OLATILE ORG 35 packaged, r N.E. (100 VASTE DISPO VASTE	TAKEN IN CASE sue/paper or clos SAL METHOD amp solid waste a erfund) REPORT ierate according DOUS WASTE No GANIC COMPON inius water) % solids) SECT PROTECTION ask or not necess	ABLE QUANT to EPA and to O. (40 CFR 26 UND (VOC) ION VII (specify type) lary at TLV's b LOCAL EXH Normally r MECHANIC Sealed wait	RELEASED OR SPILLED react liquid with water to wast mical waste for treatment. ITY (in ibs) cal regulations. 1.33) Theoretical	e. lb/gai N.Ab/gai N.A OTECTI range).	SPECIAL Normally not required. OTHER Normally not required. OTHER Normally not required.

BOWMAN DISTRIBUTION, BARNES GROUP INC. 850 East 72nd Street, Cleveland, OH 44103 Emergency Telephone No. (216) 391-7200

TRW-01136

21990, 21991 (page 2 of 2)

OTHER PRECAUTIONS
Avoid direct exposure to sunlight and alkaline materials.

U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Firm Accroved OMB No. 44 R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

· · · · SECTION I					
MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.				
Elgene Chemicals, Inc.	914-698 7800				
ADDRESS (Number, Street, City, State, and ZIP Code) 327 Northrup Avenue Mamaroneck	N.Y. 10543				
CHEMICAL NAME AND SYNONYMS	TRACEFASTIENEYNONYMS				
CHEAIRAIL detergent/degreaser	SEE ENCLOSED E.C.I. REPORT				

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	0		BASE METAL	0	
CATALYST	0		ALLOYS	0	
VEHICLE	0		METALLIC COATINGS	0	_
SOLVENTS	0		FILLER METAL PLUS COATING OR CORE FLUX	0	
ADDITIVES	σ	. •	OTHERS none		
OTHERS None					
	ES OF (OTHER LIC	DUIDS, SOLIDS, OR GASES	%	TLV (Units)
DO NOT 1	' XIN	WITH A	ACIDS		

SECTION III - PHYSICAL DATA						
BOILING POINT (°F.) 212 F	100°c	SPECIFIC GRAVITY (H2O=1)	1.01			
VAPOR PRESSURE (mm Hg.)	= H ₂ 0	PERCENT, VOLATILE BY VOLUME (%)	none			
VAPOR DENSITY (AIR=1)	= H ₂ ⁰	EVAPORATION RATE H20	1			
SOLUBILITY IN WATER	100%					
ADDE A RANCE AND ODOR	20070					

FLASH POINT (Method used)	FLAMMABLE LIMITS	Le!	Uel
none C.O.C.		none	none
EXTINGUISHING MEDIA none			
SPECIAL FIRE FIGHTING PROCEDURES NONE			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

PAGE (1)

(Continued on reverse side)

Form OSHA-20

THRESHOLD LIMIT	VALUE					
EFFECTS OF OVER		S				·
	EXPOSURE	<u>-</u> е				
		e			··· ··································	
EMERGENCY AND	FIRST AID PROCED	URES				
			e			
			n clos	ed E.C.I.	Renort	
				CC L.C.I.		
		SECTIO	 DN VI + F£	ACTIVITY DA	ATA-	-
STABILITY	T			S TO AVOID		-
	UNSTABLE	<u> </u>	1		ls shold be fer	У
	STABLE	X		ly control	led.	
	(Materials to avoid)	avoi	d acids		· · · · · · · · · · · · · · · · · · ·	-
HAZARDOUS DECC	MPOSITION PRODU	CTS	none			
HAZARDOUS	MAY OCCU	R		CONDITIONS TO	AVOID	
POLYMERIZATION	WILL NOT	OCCUR	none	-		
		<u> </u>		<u>L, .,</u>		
	SECT	ION VII	- SPILL C	OR LEAK PRO	CEDURES	
STEPS TO BE TAKE	N IN CASE MATER			f .		<u> </u>
Mop up at	ea, sewer (ne sp.	LITEU MU	ceriar.		·
STE DISPOSAL	4571100	· · · · · · · · · · · · · · · · · · ·				
WASTE DISPOSAL I	Pro	luct ma	ay be se	wered safe	ely	<u> </u>
			~			
	SECTION	VIII - S	SPECIAL PI	ROTECTION IN	NFORMATION	
RESPIRATORY PRO	TECTION (Specify 1	vpe)	e enclo	sed E.C. I	. report	
VENTILATION	LOCAL EXHAUST		· cnere	6	SPECIAL/	
none	MECHANICAL /Ge	neral)		· · · · · · · · · · · · · · · · · · ·	OTHER	
PROTECTUVE GLOW			norgiona	EYE PROTECTION	N + G	
	Toves for lo	<u> — — — — — — — — — — — — — — — — — — —</u>	lier Sions	Goggles	n if splashing i	s expected
OTHER PROTECTIV	E EQUIPMENT			<u> </u>		
		5071011				
DECAUTIONS TO				HAL PRECAUT	HONS:	
HELAUTIONS TO	BE TAKEN IN HAND	LING AND	STORING	None		

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<u>.</u> ٦.

SECTION 1 - IDENTIFICATION

CHEMICAL NAME & SYNONYMS Ferritic Stainless steel		
CHEMICAL FAMILY Ferrous metal	FORMULA Mixture	TRADE NAME Alloy 430
Gray metallic solid		CAS NO. Not assigned/Mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIV	E EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high	As required to keep airborne concentrations of chromium and nickel below TLV.
	efficiency particulate respirator if excessive dusting/fumes occurs	

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Iron	Fume 3	No data	No data	Accumulation of dust in
Chromium	10 mg/m ³ 1.0 mg/m ³	No data	No data	lung (siderosis) Dermatitis, suspect
Nickel (< 1%)	1.0 mg/m ³	No data	No data	carcinogen Dermatitis, suspect
Manganese	5 mg/m ³ (ceiling)	No data	TC _{LO}	carcinogen Insomnia, CNS effects, fatigue
		_	(human)	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH PO	INT	OSHA CLASSIFICATION		FLAMMABLE	LOWER	UPPER
METHOD	Not applicable	Non-comb	oustible solid	EXPLOSIVE LIMITS	N/A	N/A
EXTINGUIS	SHING MEDIA Use extinguishing r	nedia suitable for sui				
SPECIAL F	re Hazard & Fire Fight self-contained brea	ING PROCEDURES thing apparatus whe	Use NIOSH/MSHA n any material is inv			ssure

SECTION V - HEALTH HAZARD DATA

THRESHO	LD LIMIT VALUE
	None established for alloy (chromium 0.5 mg/m ³ , nickel 1 mg/m ³ ACGIH 1984).
SYMPTOM	SOF OVER EXPOSURE Dust or fume: Skin, eye and mucous membrane irritation, sneezing, congestion, metallic taste, ingestion may cause vomiting, lethargy, restlessness.
SKIN	Dust or fume: Wash with EMERGENCY FIRST-AID PROCEDURES soap and water before eating or smoking. If an irritation develops, call a physician.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a physician.
INGESTIC	Dust: Not a likely route of exposure. If ingested, call a physician.
INHALATI	Dust or Fume: Remove victim to fresh air. Call a physician.

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50 ACUTE DERMAL LD 50	No data for alloy No data for alloy	CARCINOGENICITY MUTAGENICITY EYE IRRITATION	carcino No data	and chromium are suspect gens (NTP) a for alloy ay be an irritant
ACUTE INHALATION LC 50	No data for alloy	PRIMARY SKIN IRRITA	ATION	Not known to be an irritant
PRINCIPAL ROUTES OF ABSO Inhalation, dermal				
EFFECTS OF ACUTE EXPOSU		the eye. May caus	e respirat	tory irritation.
effects of Chronic Expo	SURE Although chroice that melting steel a			t carcinogens, there is no

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or Fume: Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

D.O.T. CLASS

Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

STABLE	X UNSTABLE	AT	°c				
		X UNSTABLE AT		°F	HAZARDOUS	MAY OCCUR	
		•			POLYMERIZATION	WILL NOT OCCUR X	
NCOMPATIBI	.ITY (Material to	Avold) S	trong aci	ds, strong o	oxidizers		

SECTION X - PHYSICAL DATA

MELTING POINT	2700-2750°F	VAPOR PRESSURE	No data	VOLATILES	N.A.
BOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N.A.
SPECIFIC GRAVITY	(H ₂ O = 1) *	PH N.A.		VAPOR DENSITY (Air - 1)	N.A.
* .278 lbs/d	eu. inch				

INFORMATION FURNISHED BY:

Environmental Hygiene

DATE

January 29, 1986

and Toxicology (203) 789-5436

Department of Environmental Hygiene and Toxicology (203) 789-5436

Olin corporation

120 Long Ridge Road, Stamford, Connecticut 06904

OCEANSM Network

EMERGENCY PHONE 1-800-OLIN-911

EMERGENCY PHONE 1-800-OLIN-911

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS Ferritic Stainless steel		
CHEMICAL FAMILY Metal	FORMULA Mixture	TRADE NAME Alloy 434
Silver metallic solid		CAS NO. Not assigned/Mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS	
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs	As required to keep airborne concentrations of chromium below TLV.	

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Iron	Fume 10 mg/m ³	No data	No data	Accumulation of dust in lung (siderosis)
Chromium	1.0 mg/m ³	No data	No data	Dermatitis, suspect carcinogen
Manganese	5 mg/m ³ (ceiling)	No data	TC _{LO} 2.3 mg/m	Insomnia, CNS effects,

(human) SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER
METHOD Not applicable	Non-combustible solid	EXPLOSIVE LIMITS	N/A	N/A
	edia suitable for surrounding materials.			
SPECIAL FIRE HAZARD & FIRE FIGHTI self-contained breat	NG PROCEDURES Use NIOSH/MSHA thing apparatus when any material is in	approved pos volved in a fir	itive pres e.	sure

SECTION V - HEALTH HAZARD DATA

THRESH	OLD LIMIT VALUE
	None established for alloy (chromium 0.5 mg/m ³ , ACGIH 1984).
SYMPTO	ms of over exposure Dust or fume: Skin, eye and mucous membrane irritation, sneezing, congestion, metallic taste, ingestion may cause vomiting, lethargy, restlessness.
	Dust of lume: wash with emergency first-aid procedures
SKIN	soap and water before eating or smoking. If an irritation develops, call a physician.
EYE\$	Dust or fume: Flush thoroughly with water for 15 minutes. Call a physician.
INGEST	Dust: Not a likely route of exposure. If ingested, call a physician.
INHALA	Dust or Fume: Remove victim to fresh air. Call a physician.

TRW-01141

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	No data for alloy No data for alloy	CARCINOGENICITY MUTAGENICITY EYE IRRITATION	Chromium is a suspect carcinogen (NTP) Not known to be mutagenic Dust may be an irritant
ACUTE INHALATION LC 50	No data for alloy	PRIMARY SKIN IRRITA	Not known to be an irritant
PRINCIPAL ROUTES OF ABSO Inhalation, dermal			
EFFECTS OF ACUTE EXPOSU Dust may cause m	··-	the eye. May caus	e respiratory irritation.
EFFECTS OF CHRONIC EXPO evidence that mel	BURE Although chror ting steel alloys is asso	nium is a suspect ociated with cancer	carcinogen, there is no conclusive

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or Fume: Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

D.O.T. CLASS Not regu	ılated			
SEC	TION IX - REA	CTIVITY DATA		
STABLE X UNSTABLE AT °C	° _F	HAZARDOUS	MAY OCCUR	
		POLYMERIZATION	WILL NOT OCCUR X	
conditions to avoid Presence of car	rbon monoxid	e during melting.		

SECTION X - PHYSICAL DATA

MELTING POINT	No data	VAPOR PRESSURE	No data	VOLATILES	N.A.
BOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N.A.
SPECIFIC GRAVITY	(H ₂ O = 1) *	PH N.A.		VAPOR DENSITY (Air = 1)	N.A.
* .28 lbs/cu	ı. inch				

Chromium oxides, manganese oxides

INFORMATION FURNISHED BY:

HAZARDOUS DECOMPOSITION PRODUCTS

Environmental Hygiene

and Toxicology (203) 789-5436

DATE January 29, 1986

Department of Environmental Hygiene and Toxicology (203) 789-5436

Olin CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904 OCEANSM Network

EMERGENCY PHONE 1-800-OLIN-911

1487

I PRODUCTION IDENTIFICATION

DEVLIEG MICROBORE TOOLING SYSTEMS DIVISION OF DEVLIEG MACHINE COMPANY

ADDRESS:

FAIR STREET

TELEPHONE NO: (313) 280-1100

ROYAL OAK, MICHIGAN 48068

TRADE NAME:

ALL DEVLIEG HIGH SPEED STEEL CUTTING TOOLS

(LABEL IDENTITY):

ONE OR MORE STEEL MANUFACTURERS MAY BE REPRESENTED UNDER THE DEVLIEG LABEL. SPECIFIC COMPOSITIONS AVAILABLE UPON REQUEST FROM THE MATERIAL MANU-

FACTURER OR THIS FABRICATOR.

CHEMICAL NAME:

FERROUS ALLOY

(GENERIC):

COMMON NAME:

HIGH SPEED STEEL

II PHYSICAL DATA

BOILING POINT:

5000°F

MELTING POINT:

APPROX. 2500°F

SPECIFIC GRAVITY

VAPOR PRESSURE:

N/A

(H20=1):

APPROX. $7.8-8.2 (60^{\circ} \text{F})$

SOLUBILITY IN H₂0: INSOLUBLE

EVAPORATION

VAPOR DENSITY (AIR=I):

%VOLATILES BY

N/A

(BUTYL ACETATE=1): N/A

VOLUME:

N/A

APPEARANCE &

ODOR:

VARIOUS SHAPES, SOLID,

ODORLESS METAL

III HAZARDOUS INGREDIENTS

THE TERMS 'HAZARDOUS' AND 'HAZARDOUS MATERIALS' AS USED WITHIN THIS MSDS SHOULD BE INTERPRETED AS DEFINED BY, AND IN ACCORDANCE WITH, THE OSHA HAZARD COMMUNICATIONS STANDARD (29 CFR PART 1910, 1200) INCLUDING CITED APPENDICES, LISTS, REFERENCES, ETC., ALL OF WHICH ARE HEREBY INCORPORATED BY REFERENCE.

MATERIAL OR COMPONENT	CAS NO.	OSHA PEL (MG/M3)	ACG1H TLV (MG/M3)
COBALT CHROMIUM MANGANESE	7440-48-4 7440-47-3 7439-96-5 (DUST)	0.1 1.0 5 (CEILING)	0.1 .50 5 (CEILING)
MOLYBDENUM VANADIUM	(FUME) 7439-98-7 1314-62-1 (DUST) (FUME)	15 .5(CEILING) .1(CEILING)	1 10 .05 .05

III HAZARDOUS INGREDIENTS (CONTINUED)

MATERIAL OR COMPONENT	CAS NO.	OSHA PEL (MG/M3)	ACGIH TLV (MG/M3)
CARBON	1333-86-4	3.5	5 3.5 (A9 CARBON BLACK)
TUNGSTEN	7440-33-7		- 5
SILICON	7440-21-2 (DUST)		5.0
IRON	1309-37-1	10	5

IV HEALTH HAZARD INFORMATION

WE DO NOT CONSIDER THIS PRODUCT IN THE FORM IT IS SOLD TO CONSTITUTE A PHYSCIAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABRADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION MAY PRODUCE POTENTIALLY HAZARDOUS DUST OR FUME WHICH CAN BE INHALED, SWALLOWED, OR COME IN CONTACT WITH THE SKIN OR EYES.

PRIMARY ROUTES OF ENTRY:	INHALATION	EMERGENCY FIRST AID:	REMOVE TO FRESH AIR, IF CONDITION CONTINUES, CONSULT PHYSICIAN.
	EYE CONTACT		FLUSH WELL WITH RUNNING WATER TO REMOVE PARTI-CULATE. GET MEDICAL ATTENTION.
	SKIN CONTACT		BRUSH OFF EXCESS DUST. WASH AREA WELL WITH SOAP & WATER.
	INGESTION		SEEK MEDICAL HELP IF LARGE QUANTITIES OF MATERIAL HAVE BEEN

EFFECTS OF EXPOSURE: NO TOXIC EFFECTS WOULD BE EXPECTED FROM EXPOSURE TO THE SOLID FORM OF SPECIALTY STEEL. PROLONGED, REPEATED EXPOSURE TO FUMES OR DUSTS GENERATED DURING HEATING, CUTTING, BRAZING OR WELDING MAY OR MAY NOT CAUSE ADVERSE HEALTH EFFECTS ASSOCIATED WITH THE LISTED CONSTITUENTS IN EXCESS OF OSHA PERMISSIBLE EXPOSURE. LIMITS ESTABLISHED IN 29 CFR SUBPART Z. (SEE SECTION II).

EXPOSURE LIMITS: SECTION II LISTS SPECIFIC INGREDIENTS AND PERMISSIBLE EXPOSURE LIMITS.

IMPORTANT: DETERMINE ACTUAL EXPOSURE BY INDUSTRIAL HYGIENE MONITORING.

POSSIBLE SIGNS AND SYMPTOMS OF EXPOSURE TO DUST, WELDING FUME AND GASES:

SHORT TERM EXPOSURE: METALLIC TASTE; NAUSEA, TIGHTNESS OF CHEST; FEVER; IRRITATION OF EYES, NOSE THROAT AND SKIN; LOSS OF CONSCIOUSNESS/DEATH DUE TO WELDING GASES OR LACK OF OXYGEN.

INGESTED.

IV HEALTH HAZARD INFORMATION (CONTINUED)

LONG TERM EXPOSURE:

THERE ARE NO ADVERSE EFFECTS FROM THE PRODUCTS IN THEIR SOLID FORM. ADVERSE EFFECTS MAY OR MAY NOT RESULT FROM LONG-TERM (CHRONIC) EXPOSURE TO DUST, FUME, GASES, ETC. THAT OCCUR BY WAY OF SUBSEQUENT OPERATIONS ON THE PRODUCT. SOME STUDIES WOULD ASSOCIATE ONE (OR MORE) OF THE CONSTITUENTS (PER SECTION II) WITH THE POTENTIAL FOR NEUROLOGIC, PULMONARY, RESPIRATORY, SKIN OR OTHER DISEASE. CHROMIUM, COBALT AND NICKEL IN VARIOUS CHEMICAL COMPOUNDS HAVE BEEN IDENTIFIED AS SUSPECT HUMAN CARCINOGENS BY THE I.A.R.C, N.T.P. ANNUAL REPORT. WE BELIEVE THERE ARE NO RELIABLE SCIENTIFIC STUDIES WHICH SHOW THAT WORKERS EXPOSED TO OPERATIONS UPON OUR ALLOYS SUFFER FROM INCREASED INCIDENCE OF LUNG CANCER OR OTHER DISEASE BECAUSE OF THEIR EXPOSURE TO THE FORMS OF CHROMIUM, NICKEL OR OTHER ELEMENTS IN OUR PRODUCTS.

AGGRAVATION OF PREEXISTING REPIRATORYOR ALLERGIC CONDITIONS MAY OCCUR IN SOME WORKERS.

FIRE AND EXPLOSION DATA

FLASH POINT:

NONE

FIRE POINT:

NONE

VI REACTIVITY DATA

STABILITY:

CHEMICALLY STABLE

INCOMPATIBILITY:

REACTS WITH STRONG ACIDS TO GENERATE HYDROGEN GAS

HAZARDOUS DECOMPOSITION PRODUCTS:

METALLIC OXIDES

VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF

RELEASE OR SPILL:

N/A

WASTE DISPOSAL METHOD:

SOLIDS - SALE AS SCRAP FOR REUSE

DUST, ETC. -

FOLLOW FEDERAL, STATE AND LOCAL REGULATIONS REGARDING DISPOSAL

VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:

GENERAL - RECOMMENDED (TO KEEP AIRBORNE CONCENTRA-TION OF DUST AND FUMES BELOW ACGIH TLV'S)

LOCAL - AS REQUIRED

VIII SPECIAL PROTECTION INFORMATION (CONTINUED)

RESPIRATORY PROTECTION:

USE AN APPROPRIATE NIOSH APPROVED RESPIRATOR IF AIRBORNE DUST CONCENTRATIONS EXCEED THE APPROPRIATE PEL OR TLV. ALL APPROPRIATE REQUIREMENTS SET FORTH IN 29 CFR 1910.134 SHOULD BE MET.

VENTILATION: USE LOCAL EXHAUST VENTILATION WHICH IS ADEQUATE TO LIMIT PERSONAL EXPOSURE TO AIRBORNE DUST TO LEVELS WHICH DO NOT EXCEED THE PEL OR TLV. IF SUCH EQUIPMENT IS NOT AVAILABLE USE RESPIRATORS AS SPECIFIED ABOVE.

PROTECTIVE GLOVES: PROTECTIVE GLOVES OR BARRIER CREAM ARE RECOMMENDED WHEN CONTACT WITH DUST OR MIST IS LIKELY. PRIOR TO APPLYING THE BARRIER CREAM OR USE OF PROTECTIVE GLOVES, WASH THOROUGHLY. EYE PROTECTION: SAFETY GLASSES WITH SIDE SHIELDS OR GOGGLES ARE RECOMMENDED.

OTHER PROTECTIVE EQUIPMENT: N/A

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: MAINTAIN GOOD HOUSEKEEPING PROCEDURES TO PREVENT DUST ACCUMULATION DURING GRINDING. AVOID DUST INHALATION AND DIRECT SKIN CONTACT WITH DUST.

OTHER PRECAUTIONS: CLEAN UP USING METHODS WHICH AVOID DUST GENERATION SUCH AS VACUUM (WITH APPROPRIATE FILTER TO PREVENT AIRBORNE DUST LEVELS WHICH EXCEED PEL OR TLV), WET DUST MOP OR WET CLEAN-UP. IF AIRBORNE DUST IS GENERATED, USE AN APPROPRIATE NIOSH APPROVED RESPIRATOR.

WASH HANDS THOROUGHLY AFTER HANDLING, BEFORE EATING OR SMOKING. WASH EXPOSED SKIN AT THE END OF WORK SHIFT. DO NOT SHAKE CLOTHING, RAGS OR OTHER ITEMS TO REMOVE DUST. DUST SHOULD BE REMOVED BY WASHING OR VACUUMING (WITH APPROPRIATE FILTERS) THE CLOTHING, RAGS, OR OTHER ITEMS.

PERIODIC MEDICAL EXAMINATIONS ARE RECOMMENDED FOR INDIVIDUALS REGULARLY EXPOSED TO DUST OR MIST.

IN CASE OF QUESTIONS PLEASE CALL: DEVLIEG MICROBORE TOOLING SYSTEMS DIVISION DEVLIEG MACHINE COMPANY FAIR STREET ROYAL OAK, MICHIGAN 48068 (313) 280-1100

John G. Fork

ISSUE DATE:

SUPERSEDES: N/A

ALTHOUGH DEVLIEG MICROBORE TOOLING SYSTEMS HAS ATTEMPTED TO PROVIDE CURRENT AND ACCURATE INFORMATION HEREIN, DEVLIEG MICROBORE MAKES NO REPRESENTATIONS REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION AND ASSUMES NO LIABILITY FOR ANY LOSS, DAMAGE, INJURY OF ANY KIND WHICH MAY RESULT FROM OR ARISE OUT OF THE USE OF OR RELIANCE ON THE INFOR-MATION BY ANY PERSON.

TITLE Manager, Sacety



Pikesville Plaza Suilding, Suite 502 600 Relateratown Road Baltimore, Maryland 21308 Telephone: (301) 486-0010 (301) 486-0895

MATERIAL SAFETY DATA SHEET Ferrous Sulfate Septabydrate



Product/Material: Menufacturer's Name: Address:

Emergency Tel. No: Date Prepared:

Ferrous Sulfate Reptahydrate OC Corporation Pikesville Plaza Building - Suite 502 600 Relaterstown Road Beltimore, Maryland 21208 (301) 486-0010 January 30, 1988

Section I Trade Name: I - Product Identification

Synonym: Chemical Family: Formula: CAS: EMIS:

DOT Category:

400 1 30H2

Ferrous Sulfate Reptahydrate Copperas, Green Vitriol, Iron Vitriol Iron (II) Sulfate FeSO4.7HsO 7720-78-7 Hi FO RO, Personal Protection Code - 3 (Safety glasses, gloves, dust respirators) ORHE (RQ 1000 pounds)

Section II - Satardous Ingradients OSHA PEL ACGIN TLV (1979)

70804 . 7HaO -

Rat. Oral LD50: 1480 ng/Ig

Section III - Physical Data Bolling Point: Vapor Pressure (nm Hg): Vapor Density: Solubility in Water: Appearance & Odor: Specific Gravity: Evaporation Rate: Helting Point:

Decomposition at 300° C 0.
N.A.
103 qms, in 100 ml water # 140° F
Light Blue-green, Acidic or Bour
1.299 14° / 8° C
N.A.
300° C

Section IV - Fire and Suplemion Hazard Data
Flash Foint:
Flashable Limits:
LEL:
UEL:
N.A. Extinguishing Media: Special Firezighting Procedures: Unusual Fire & Explosion Resards: .k.k ro egok Mone

Section V - Reactivity Data Stability: Incompatibility: Conditions to Avoid: Bazardous Decomposition Products: Razardous Polymerization:

Stable Oxidizing Agents and Albaliae Extremely high temperatures groductive of sulfur oxides, i.e.: 30s and

Section VI - Realth Resert Sets Koute(s) of Intry: Health Hezerds (Acute and Chronic): Inhalation:

škin: Ingestion:

Carcinogenicity: Signs and Symptoms of Exposure:

Medical Conditions Generally Aggravated by Exposure:

Emergency and First Aid Procedures:

Inhalation (Yes) Skin (Yes) Ingustion (Yes)

Irritation to tracked and lungs, breathing difficulty.
Irritation to skin, very irritating to eyes.
G.I. track irritation, shock, liver damage,

tachycardia and death.
Not established.
Trritation or itching, stinging of eyes, breathing problems, stomach ache, acidic or sour taste.

Dermatitis, asthma, conjunctivitis, stomach or digestive problems.

Flood skin and eyes with water for is ainutes ainimum, remove to itset air, cover if in shock, remove to physicians care.

Section VII - Progentions for Sade Handling and Use Steps to be taken in Case Asterial is Released or Spilled: Sweep up and re-

Sec

Waste Disposal Nethod:

Precautions to be Taken in Handling & Storage:

Other Precautions:

Sweep up and repackage or place in redeptacle for future disposal. Remove to properly lesignated landfill or, if in solution, precipitate fith aliali and filter off iron for removal to landfill with pH adjustments of the filtrate and discharge

to zewer.

Wear gloves, defety jodglos, breathing mask and coveralls when handling. Stored materials should be placed in a 477 and reasonably temperatured area, preferably below 75% 7 to prevent changes of daking. ecos.

Jection VIII - Control Measures Jestivarity Protection: Ventilation:

Protective Gloves: Eye Protection: Clothing or Equipment: Work/Hygienic Practices:

Dust Mask
Local Exhaust - None | Decial - None |
Hechanical - None | Other - None |
Work Gloves |
Safety Congles |
Coveralls |
Available safety showers is well as and of shift clear-up facilities.

TRW-01148

म्हर्भ केच अ

MATERIAL SAFETY DATA SHEET

THE HODSON CORPORATION DIVISION OF ANDERSON OIL & CHEMICAL COMPANY 5301 W. &&TH STREET CHICAGO, ILLINDIS 60638 TELEPHONE: (312) 767-8447 OR 312-767-4038

		russtrau Daubakus					
TRADE NAME: 5170-F	DRAWING	CUMPOUND)	CHEMICAL		N/f	
CHÉMICAL FAMILY: AQU	IAECUS PAS	ŢΕ	;	FORMULA:		N/f)
HAZARDOUS MATERIAL ID SYSTEMS CODES		;	FLAMMAS				
*********				*********			
*********		(AL	.SO SEE SE	FONENTS &	1	n to the second second	
00	MONENI			ΙΓΛ			
MI	NERAL OIL			5 MG/M3	S AS MIST		
	e wanunan s :	21.21.21 17		ការប្រជាធាធាធ ធ		rweensa	. 2 15 12 13 13 13 13 13 13 13 13 13 13 13 13 13
	******	******			: # : : : : : # # # # # # # # # # # # #		.=4000000000000000000000000000000000000
BOILING POINT, FAH.	212			SPECIFI	IC GRAVITY	/ (H20=1	.)
VAPOR FRESSURE (MM HG	17.5	5		% VOLATI	LE BY VOL	LUME	40-60
VAFOR DENSITY (AIR=1)			•	N-BUTYL EVAPORAT	TON RATE		(1 : папетпавечен замаве:
				ON INFORM			
FLASH POINT,FAH,			6	FL	.AMMABILIT	TY LIMIT	S N/A
	N/A			LEL		l UE	
EXTINGUISHING MEDIA: EVAPORATION,							AFTER WATER
DECOMPOSITION PRODUCT							
ESSENSEESSESSESSESSESSESSESSESSESSESSESS							
UNUSUAL FIRE AND EXPL SPRAY TO COOL SURFACE	OSION HAZA	ARDS:	AVOID BRE	ATHING DE	COMPOSITI		
SERVICE DOLL SOMEROE	= = = = = = = = = = = = = = = = = = =					uesasa: 1 da To	

_X_WILL NOT OCCUR	MAY OCCUR		_X_STABLE	UNSTABLE
dal ann per dall med les que 47 des des des des mes dep se per fer fer de 150 des que fer s en s e	· ···· · · · · · · · · · · · · · · · ·			
	V. HEF	ALTH INFORMATIO	IN	
THRESHOLD LIMIT VALUE: (UNKNOWN REF. SECTION II	PRIMAR'	Y ROUTE(S) OF ENT IN AND INHALATION	RY
INHALATION: INHALATION	OF OIL MIST OR	FUMES FROM HEA	ATED MATERIAL IN	HIGH CONCENTRATIONS
MAY RESULT IN DIZZINESS, H	HEADACHE, RESPIR	RATORY IRRITAT:	ION OR UNCONSCIOU	SNESS.
排除 物理 化结合 医乳管 计可以 计可以 化硫铁 医抗性 计自信标识别	***********			
EYE CONTACT: MAY PRODUCE MATERIAL IN HIGH CONCENTRA	MILD TRANSIENT TIONS MAY CAUSE	IRRITATION TO E EYE IRRITATION	SOME USERS, FUM ON, HEATED MATER	ES FROM HEATED
EYES CAN CAUSE SERIOUS INJ	TURY.			
		*** * * * * * * * * * * * * * * * * * *	=======================================	
SKIN CONTACT: FERSONNEL A	WITH PRE-EXISTIN	NG SKIN DISORDS	ERS SHOULD AVOID	CONTACT WITH THIS
PRODUCT, PROCUNGED ON NEP	EHIED SKIN COM	INCI MAT CHUSE	IRRITATION HAD D	chMa(1)15,
INGESTION: HAS LOW ORDER	OF TUXICITY.			

THIS PRODUCT CONTAINS 0.1%	OR MORE:			
		AN/A		
		A. B. C.		
WHICH IS (ARE) REPORTED TO	FF:	CARCINOGE		
Willett Tel Cilier, Lee and may the	BY:	POTENTIALIARC	LLY CARCINGGENIC	SHA
******************	: n n in			## = #################################
INHALATION: IF OVEREXFOSE AREA TO FRESH AIR, IF BRE	D TO DIL MIST. ATHING IS IRREG	VAPORS OF FUMB SULAR OR HAS SI	IS, REMOVE PERSON TOPPED, RESUSCITA	FROM CONTAMINATED TE AND ADMINISTER
OXYGEN - SEEK MEDICAL ATTE	INTION IMMEDIATE	ELY.		
EYE CONTACT: FLUSH EYES W MEDICAL ATTENTION.	IITH WATER FOR F	AT LEAST 15 MIN	NUTES. IF IRRITA	TION FERSISTS, SEEK
•				
EFETTERSEEFETERS				
CLOTHING BEFORE REUSE.	121 1110 111011000	71C1 W1111 GG/II	THE WHICH WHICH	
INGESTION: DO NOT INDUCE				
ATTENION IMMEDIATELY.				

		PLOYEE PROTECT!	ION	

RESPIRATORY PROTECTION: (USE NICSH/MSHA-APPROVED EQUIPMENT) NORMALLY NOT NEEDED AT AMBIENT TEMPERATURES. USE AIR RESPIRATOR IN CONFINED SPACES OR IF FUMES OR MIST DEVELOP FROM HEATING OR AGITATION AND TLV IS EXCEEDED (SEE SECTION II. AND V.).
EYE PROTECTION: USE SPLASH GOGGLES OR FACE SHIELD WHEN EYE CONTACT MAY OCCUR.
SKIN PROTECTION: USE OIL-RESISTANT GLOVES AND AFRON.
VENTILATION: PROVIDE LOCAL EXHAUST AS REQUIRED TO MAINTAIN TLV SELOU RECOMMENDED LEVEL.
VIII, STORAGE STORAGE: KEEP CONTAINERS CLOSED WHEN NOT IN USE. DO NOT STORE OR HANDLE NEAR HEAT, FLAMES, OR STRONG OXIDIZERS.
IX. ENVIRONMENTAL PROTECTION
IN CASE OF SPILL OR LEAK: CONTAIN SPILLS, THEN CLEAN UP USING VACUUM TRUCK OR ABSORBENT MATERIAL, SIGNIFICANT SPILLS SHOULD BE REPORTED TO APPROPRIATE AGENCIES.
WASTE DISPOSAL: DISPOSE OF IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATION.
PREFARER'S NAME: J. BERTELL STATURES TELL DATE PREFARED

The information contained herein is correct to the best of our knowledge. The recommendations or suggestions contained in this data sheet are made without guarantee or representation as to results. We suggest that you evaluate these recommendations and suggestions in your own laboratory prior to use. Our responsibility for claims arising from breach of warranty, negligence, or otherwise is limited to the purchase price of the material. Freedom to use any patent owned by anyone is not to be inferred from any statement contained herein. WITH REGARD TO THE MATERIAL SELLER MAKES NO WARRANTY OF ANY KIND WHATEVER, EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES OR MERCHANT ABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED BY SELLER.

BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

SECTION I

PRODUCT NAME	BOWMAN PART NO.
FLAT BLACK ENAMEL	24707 (page 1 of 3)
SUPPLIER	EMERGENCY TELEPHONE NO.
Bowman Distribution, Barnes Group Inc.	(216) 391-7200
ADDRESS	DATE
850 East 72nd Street, Cleveland, OH 44103	1/26/88
HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING NA Aerosol Spray Paint, Consumer Commodity, OR	
ADDITIONAL HAZARD CLASSES (as applicable)	
N.A.	
CHEMICAL FAMILY	FORMULA
N.A.	X8261

SECTION II - HAZARDOUS INGREDIENTS

CAS REGISTRY NO.		%V	CHEMICAL NAME(S)	T PPM	LV Mg/M³	Listed as a Carcinogen in NTP, IARC or OSHA 1910(z) (specify)
67-64-1	30-40		Acetone	750	1750	No
1330-20-7	5-10		Xylene	100	435	No
64-17-5	5-10		Ethyl Alcohol	1000	1900	No
123-42-2	5-10		Diacetone Alcohol	50	240	No
78-93-3	5		Methyl Ethyl Ketone	200	590	No
-	23		Propellant: Propene/isobutane		-	No

SECTION III - PHYSICAL DATA

LING POINT 133 oF	°C	SPECIFIC GRAVITY (H ₂ O = 1)	.9	ю		
VAFOR PRESSURE 186 @°F20_°C mm Hg	ı □ psi	PERCENT VOLATILE BY VOLUME (%)		5-90	PERCENT SOLID BY WEIGHT (%)	15-20
VAPOR DENSITY (AIR = 1)	N.A.	EVAPORATION RATE (=		l.A.		
SOLUBILITY IN WATER	N.A.	pH =	N	I.A.		
APPEARANCE AND ODOR Paint, solvent odor.					MATERIAL IS: LIQUID	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	method used	FLAMMABLE LIMITS	LEL	UEL
	<u>18</u> °C	1	1.1	N.A.
EXTINGUISHING MEDIA				
Carbon Dioxide, Dry	Chemical, or Alcohol Foam			
SPECIAL FIRE FIGHTING	PROCEDURES			
Water spray may be in	neffective. Water may be used to	cool closed containers to prevent	pressure build-up and	possible autoignition or
explosion when expo	sed to extreme heat. If water is u	sed, fog nozzies are preferable.		
UNUSUAL FIRE AND EXP	LOSION HAZARDS			
Vapors are heavier th	an air and may travel along the g	round or may be moved by ventilat	tion and ignited by pil	ot lights, other flames,
sparks, heaters, smol	ing, electric motors or other ign	ition sources at locations distant fr	om material handling	point.
L				

24707 (page 1 of 3)

SECTION V - HEALTH HAZARD DATA EFFECTS OF OVEREXPOSURE - Conditions to avoid Excessive inhalation of various — and conditions to avoid

Excessive inna	lation of vapors -	– car	1 cause nass	H and re	aspira	itory irritation,		PËRMISSIBLE EXPOSURE LIMIT		
dizziness, weakness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation.						.	OTHER LIMIT			
PRIMARY ROL	ITES OF ENTRY	Int	halation (S)	Skin C	Contac	t Other (spec	ifu)			
FRIMANI NOC	TES OF ENTRY	1111	iaiation <u>ix</u> i	Skill Ci	Untac	Cities (spec	, (V			
	AND FIRST AID				-11241 -			Abla bas shared all a salidated and last		
	arm, quiet and ge				diffic	uit, administer ox	gen. II brea	sthing has stopped, give artificial respiration.		
reep person w	arm, quier and gr	st iiie		VII.						
			SEI	E DAGE	3 EO	R ADDITIONAL S	ECTION V	INFORMATION		
										
						VI - REA	CTIVIT	TY DATA		
074BU 17V	UNSTABLE		CONDITIO	ONS TO) AVC	OID				
STABILITY	STABLE	x	Heat, spai	rke and		flame		——————————————————————————————————————		
INCOMPATIBI	LITY (materials to									
	with: strong oxidi			heat.						
N.A.	DECOMPOSITIO	IN PF	1000015:							
		MA	AY OCCUR			CONDITIONS TO	DIOVAC			
HAZARDOUS POLYMERIZAT	TION	W	ILL NOT OC	CUR	x	102.				
		<u>L</u>								
	S	E	CTION	VII	<u>- S</u>	PILL OR	LEAK	PROCEDURES		
	TAKEN IN CASE						l and transfe	er to a closed container. Eliminate all ignition sources.		
Absorb iiqaia c	m paper, vermice	mie,	1001 808010			BOSOIDEIII IIIAIEIIA	Tario transit	er to a closed container. Eminiete an ignition sources.		
WASTE DISPO					4-41-			dill to accordance with level white and fordered war whether		
material collect	ING OU SDSOLDEUR	mate	rial may be	ceposii	ea in	a posted toxic sui	Distance land	dfill in accordance with local, state and federal regulation		
CERCLA (Supe N.A.	erfund) REPORT	ABLE	EQUANTITY	ィ(in lbs	;)					
RCRA HAZARI	DOUS WASTE NO	O. (40	0 CFR 261.3	3)						
N.A.										
VOLATILE OR	GANIC COMPOL	JND	(VOC)	X)	Theo	retical5.1 lb/	gal			
(as packaged, r	illius water)			☐ Analytical lb/gal N			i N.A .	. (see theoretical)		
	CECT	10	NI 3/411							
DECDIDATORY	PROTECTION			<u>- 5P</u>	EU	IAL PHO	IECII	ON INFORMATION		
NIOSH/MSHA	jointly approved	spec self-c	ing type) contained br	reathing	appr	ratus with a full fa	ice piece op	perated in pressure demand.		
			,							
		Tio	CAL EXHAL	UST /sr	ecify	rate		SPECIAL		
VENTILATION		S	ufficient to r	maintair	n exp	osure below TLV(в).	0, 20, 10		
		ME	CHANICAL	. (gener	ral) (s	pecify rate)		OTHER		
PROTECTIVE (GLOVES (specify	type	3)				EYE PRO	DTECTION (specify type)		
Chemical resist			·				Chemical	splash goggles in compliance with OSHA regulations.		
OTHER PROTE	ECTIVE EQUIPM		F PAGE 3 F	OR ADI	DITIC	NAL SECTION V	II INFORMA	ATION		
						·		· · · · · · · · · · · · · · · · · · ·		
							L PRE	CAUTIONS		
	S TO BE TAKEN areas above 120°					G r heat or open flan	nes.			
OTHER PRES	UTIONS									
OTHER PRECA Store large qua		as pr	otected for a	storage	of NF	PA Class 1C flam	mable liquid	ds.		
 		<u> </u>		_ _						
										
								BOWMAN DISTRIBUTION, BARNES GROUP		
2470	17							850 East 72nd Street Cleveland OH 4		

24/U/ (page 2 of 3)

Emergency Telephone No. (216) 391-7200 1-26-88

See Section II

BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

SECTION I

PRODUCT NAME	BOWMAN PART NO.
FLAT BLACK ENAMEL	24707 (page 3 of 3)
SUPPLIER	EMERGENCY TELEPHONE NO.
Bowman Distribution, Barnes Group Inc.	(216) 391-7200
ADDRESS	DATE
850 East 72nd Street, Cleveland, OH 44103	1/26/88

SECTION V - HEALTH HAZARD DATA

ROUTES OF ENTRY	▼ Inhalation	Skin	☐ Ingestion	X Eyes
CARCINOGENICITY	☐ NPT	☐ IARC	☐ OSHA	
	Ingredients for product(s) lis	led in Section II are not	found in these agencies' lists.	
SYMPTOMS OF OVERE	XPOSURE:			
Acute:				
	essive inhalation of vapors ca unconsciousness and even a		ratory irritation, dizziness, wea	kness, fatigue, nausea,
EYE CONTACT —	an cause severe irritation, re	dness, tearing, blurred vi	sion.	
SWALLOWING — c	an cause gastrointestinal irrit	ation, nausea, vomitting	, diarrhea.	
SKIN CONTACT —	can cause irritation for some	persons.		
Chronic:				
None known for pro	duct(s) in Section II.			
damage. Severe ove	rexposure in laboratory anim	als has also caused hear	sure to solvents with permanen rt and liver abnormalities and d ; the contents may be harmful o	amage to kidneys, lungs,
Medical Conditions Generally Aggravated	by Exposure:			
Can cause allergic r	espiratory and/or skin reaction	on.		
FIRST AID - EMERGEN	ICY PROCEDURES:			
IF BREATHED — remo		reathing is difficult, adm	inister oxygen. If breathing is a	stopped, give artificial
IF IN EYES — flush wi	th water for 15 minutes while	occasionally holding ey	elids open. Get medical attentic	on.
	o not induce vomitti <mark>ng (aspira</mark> iiet, and get medical attention		gs can cause chemical pneumo	onitis, which can be fatal).
IF ON SKIN — wasn w	rith soap and water or various	hand cleaners, and was	h clothing before re-use.	

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

For casual/occasional use — to avoid breathing vapors or spray mist, open windows and doors or use other means to ensure fresh air entry during application and drying. If you experience eye watering, headaches, or dizziness, increase fresh air, wear respiratory protection (NIOSH/MSHA TC23C or equivalent), or leave the area.

VENTILATION

For regular/continuous use — provide sufficient mechanical (general) and/or local exhaust ventilation to maintain exposure below TLV's in Section II.

PROTECTIVE GLOVES

Wear chemical resistant gloves, such as neoprene, if skin contact is to be avoided.

EYE PROTECTION:

Chemical splash goggles, in compliance with OSHA regulations, are advised.

OTHER PROTECTIVE EQUIPMENT:

Where special or unusual conditions exist, the expert assistance of an industrial hygienist should be sought.

WORK/HYGENIC PRACTICES:

Wash hands before eating or using washroom. As with all chemicals, minimize personal contact and breathing of vapors.

24707 (page 3 of 3)

DEPT. 217

MATERIAL SAFETY DATA SHEET

FOR COATINGS, RESINS AND RELATED MATERIALS

DATE OF PREP. 10/4/79		PRO	DUCT	7070- XX2 S	ERIES COLOR
	Section 1				
MANUFACTURER'S NAME RAFFI AND SWANSON,	INC.				
STREET ADDRESS 100 Eames Street	CITY, STATE, AND	ZIP CODE W	/ilmington, A	Mass. 01887	
EMERGENCY TELEPHONE NO. 617-933-4200	MANUFACTURER'S C	_			
PRODUCT CLASS Flat Epoxy Coating	7070-XX2	Flat Epo:	xy Coating	, ,	
TRADE NAME N/A					
Information on the composition of Raffi and Swam in safe handling of these materials. Use or discloss			•	n and is provide	d solely to aid
Section II	- HAZARDOUS I	NGREDIE	ENTS		
INGREDIENT	Average PERCENT		TLV	LEL	VAPOR
		PPM	mg/M ^a		PRESSURE
Toluene	22	1.00		1.2%	23 mm Hg
Cellosolve Acetate	23	\$ 0		1.7%	1.7 mm Hg
Xylene	12	100		1.0%	10 mm Hg
rmal Butyl Alcohol	6	100	j	1.4%	4.3 mm Hg
Methyl Isobutyl Ketone	6	100		1.4%	15 mm Hg
Section	on III — PHYSICA	L DATA			
BOILING RANGE 232 - 343°F.	VAPOR	DENSITY	X HEAVIER	LIGHTER,	THAN AIR
EVAPORATION RATE FASTER X SLOWER, THAN	Average ETHER PERCENT VOLUME BY VOLUME		WEIGHT GALLON		
Section IV — FIF	RE AND EXPLOSIC	ON HAZA	ARD DATA	4	
DOT CATEGORY Flammable Liquid OSHA Flammability Classification: Flam EXTINGUISHING MEDIA			. 40°F. Cl	osed Cup	LEL 1.0%
Carbon Dioxide, Dry Chemical or Foam.					
UNUSUAL FIRE AND EXPLOSION HAZARDS					
Keep containers tightly closed. Isolate fro containers may explode when exposed to		pen flame.	Do not appl	ly to hot surfc	ices. Closed
SPECIAL FIRE FIGHTING PROCEDURES					
Water may be ineffective. Water may be	e used to cool closed o	containers.		TRW	7-011 55
LIARILITY IS EXPRESSLY DISCLAIMED FOR AN	V 1000 00 INITION ADJUSTED	OUT OF THE U	ISE OF THIS INFO	ORMATION OR AN	

	PRODUCT 7070-XXX SERIES COLORS
Section V — HEALTH HAZARD	DATA
THRESHOLD LIMIT VALUE See Section 11	
INHALATION: Vapor irritating to eyes, nose, and throat. Can cause	hendache dizziness nausea weakness
loss of consciousness.	Productic, dizziness, fluused, weakiless,
EYE CONTACT: Burning and irritation.	
EMERGENCY AND FIRST AID PROCEDURES	
INHALATION: Provide fresh air. Give artificial respiration or oxygen	n if necessary. Call physician.
EYE CONTACT: Lubricate eye with C. P. Castor Oil or wash with lar	ge amounts of water. SEE PHYSICIAN.
Section VI — REACTIVITY D	ATA
STABILITY UNSTABLE X STABLE CONDITIONS TO AVOID INCOMPATABILITY (Materials to avoid) None Known	
INCOMPATABILITY (Materials to avoid) NONE KNOWN HAZARDOUS DECOMPOSITION PRODUCTS	
HAZARDOUS POLYMERIZATION MAY OCCUR	
CONDITIONS TO AVOID	
Section VII — SPILL OR LEAK PRO	CEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	_
Remove all sources of ignition. Avoid breathing vapors. Ventilate area sparking tools.	a. Remove with inert absorbent and non-
w/ DISPOSAL METHOD Incinerate in approved facility. Solid residue to sanita local, state, and federal regulations. Do not incinerate closed contain	ary land fill. Dispose in accordance with ners.
Section VIII — SPECIAL PROTECTION I	INFORMATION
RESPIRATORY PROTECTION	
Avoid breathing concentrated vapors or overspray particles if sprayed, use Bureau of Mines approved mask with chemical canister or supplied	
- VENTILATION	
Provide general mechanical ventilation or local exhaust ventilation	sufficient to keep TLV of vapors below
5 0PPM.	
PROTECTIVE GLOVES Use for prolonged or repeated contact.	
EYE PROTECTION Safety goggles or face shield where splashes can occur. OTHER PROTECTIVE EQUIPMENT	
Section IX — SPECIAL PRECAU	TIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	
FLAMMABLE. Keep in closed containers. Avoid sparks or flame when conditions.	n handling. Can be stored under ambient
OTHER PRECAUTIONS	
Avoid prolonged contact with the skin.	
	TRW-01156

PRODUCT

Man-GILL CHEMICAL COMPANY

23000 ST. CLAIR AVE. • CLEVELAND, OHIO 44117 • 216 - 486-5300 • CHEMTREC 800 - 424-9300



MATERIAL SAFETY DATA SHEET

	Section I		07869
Identity	Date Prepared 02/21	/86 Date Revised	11/15/85
FLATTING BASE	NEPA CODE. 3	FLAMMABILITY	2 REACTIVITY 1
Section II	— Hazardous	Ingredients	
Hazardous Ingredients	CAS#	Health Hazards	ACGIH TLV - TWA
CELLOSOLVE ACETATE		SKIN	27 MG/CUM
· •			
		!	
NO COMPONENT WAS FOUND TO BE	CARCINDGENIC	IN NTP. IARC OR	DSHA 1910(7)
		al Characteristic	<u> </u>
Boiling Point	Specific Gra		
313 DEG F		1. 02	
Vapor Pressure (mm Hg) NOT DETERMINED	Percent Vola By Volume (9		
Vapor Density (AIR = Reference) HEAVIER	Evaporation (Ether = Refe		ER
Water Soluble			
ND Appearance and Odor			
WHITE LIQUID, MILD ODOR			
Section IV — F	ire and Explosi	on Hazard Data	
Flash Point (Method Used)		immable Limits	LEL UEL
126 DEG F TCC		OT DETERMINED	
Extinguishing Media CARBON DIOXI	DE. DRY CHEMI	GAL.	
	EXPOSED TO H	EAT, PRESSURE	WILL BUILD UP IN
CONTAINER. Unusual Fire and Explosion Hazards	A STRATCHT	WATER STREAM I	MOULD SPREAD
FIRES. STATIC ELECTRICITY COL			HOOLD OF WEND

0908-2526

Man-Gill CHemical Company MATERIAL SAFETY DATA SHEET FLATTING BASE 07869 Section V — Reactivity Data STABILITY Conditions to Avoid Unstable AVOID PROLONGED STORAGE AT ELEVATED TEMPERATURES. Stable INCOMPATIBILITY (Materials to Avoid) NONE KNOWN Hazardous Decomposition Products OXIDES OF CARBON Conditions to Avoid May Occur **HAZARDOUS POLYMERIZATION** NONE Will Not Occur * Section VI — Health Hazard Data Effects of Overexposure MILD SKIN IRRITANT. HARMFUL IF SWALLOWED. IRRITATING TO THE EYES. INHALATION MAY CAUSE HEADACHE, NAUSEA, AND DIZZINESS. **Emergency and First Aid Procedures** FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR 15 MINUTES Eye (Contact): AND CONTACT PHYSICIAN IMMEDIATELY. WASH WITH SOAP AND WATER. CONTACT PHYSICIAN Skin (Contact): IRRITATION PERSISTS. DRINK LARGE QUANTITIES OF MILK OR WATER. Ingestion (Swallowing): CONSULT PHYSICIAN IMMEDIATELY. Inhalation (Breathing): REMOVE TO FRESH AIR. Section VII — Precautions for Safe Handling & Use Steps to be taken in Case Material is Released or Spilled ABSORB AND DISPOSE WASTE. CONTAIN SPILL. Waste Disposal Method: DISPUSE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. Precautions To be Taken in Handling and Storage DO NOT STORE OR USE NEAR HEAT, SPARKS, OR FLAME. DO NOT STORE NEAR COMBUSTIBLE MATERIAL. DO NOT STORE IN DIRECT SUNLIGHT. WHEN SANDING DRY FILM, USE NIOSH APPROVED DUST MASK. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. SHOWERS AND EYE WASH FOUNTAINS SHOULD BE MADE Other Precautions: AVAILABLE WHERE CHEMICALS ARE USED. Section VIII — Control Measures Respiratory Protection (Specify Type) USE NIOSH APPROVED EQUIPMENT WHEN AIRBORNE EXPOSURE LIMITS ARE EXCEEDED. RECOMMENDED TO MAINTAIN BELOW TLV Ventilation Mechanical Protective Gloves Eye Protection SPLASH GOGGLES OR FACE SHIELD NEOPRENE RUBBER Other Protective Clothing or Equipment PROTECTIVE CLOTHING SUFFICIENT TO PREVENT SKIN CONTACT. Work/Hygienic Practices

WASH THOROUGHLY BEFORE EATING, SMOKING OR USING TOILET FACILITIES.

THE INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE DEPENDABLE AND IS ACCURATE TO THE BEST OF SELLER'S KNOWLEDGE, HOWEVER, SELLER MAKES NO WARRANTY WHATSOEVER, EXPRESSED. IMPLIED OR OF MERCHANTABILITY REGARDING THE ACCURACY OF SUCH DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, SELLER ASSUMES NO RESPONSIBILITY FOR INJURY TO BUYER OR TO THIRD PERSONS OR FOR ANY DAMAGE TO ANY PROPERTY AND BUYER ASSUMES ALL SUCH RISK.

TRW FASTENERS "TITCTON 0207300-00

BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

			SI	ECTIC	NI				
PRODUCT NAME TEFLON® SEA	LANT	TAPE					BOWMAN PAR 21463, 2146		je 1 of 2)
SUPPLIER Bowman Distri	butlon,	, Barnes	Group Inc.				EMERGENCY (216) 391-72		NO.
ADDRESS 850 East 72nd	Street.	Clevelan	d. OH 44103				DATE 1/15/88		
HAZARDOUS MATERIA				NAME, HA	ZARD CLASS,	HAZARI		72.101)	
ADDITIONAL HAZARD	CLASSE	S (as applie	cable)					· · · · · · · · · · · · · · · · · · ·	
CHEMICAL FAMILY Flurocarbon					FORMULA Carbon	- fluori	ne		
	S	SECTIO	ON II - HAZ	ARDO	OUS ING	RED	IENTS		
CAS REGISTRY NO.	%W	%V		CHEM	IICAL NAME(S	S)		Listed as a C in NTP, IARC 1910(z) (s	C or OSHA
			Chemical	name and	synonyms: Po	lytetrafiu	orethylene		
			Material gasse	es off at 61	0°F — ablates	— leavir	ig fluorine gas		
		-						ļ	
		1							
		S	ECTION III	l - PHY	SICAL	DAT	4 .		
BOILING POINT N	lone °F	°c	SPECIFIC GRA	WITY (H ₂ O	= 1)	2.0			
VAPOR PRESSURE @ ——°F ——°C □] psi	PERCENT VOL	ATILE BY	VOLUME (%)	0	PERCENT S WEIGHT (%)		
VAPOR DENSITY (AIR =		None	EVAPORATION	NRATE (= 1)				
SOLUBILITY IN WATER		None	pH =						
APPEARANCE AND OD White color, punger		610° F.				_	MATERIAL I	S:	<u></u>
S	ECTI	ON IV	- FIRE ANI			I HAZ	ZARD DAT	Ά	
FLASH POINT None	°C	method	used	FLAMMA	BLE LIMITS	-	LEL	UEL	
EXTINGUISHING MEDIA						_		<u> </u>	
SPECIAL FIRE FIGHTIN									
Dry extinguisher —	use 0° m	ask.							
UNUSUAL FIRE AND EX	KPLOSIC	N HAZARI	DS .						
None			·			· · ·			

21463, 21464 (page 1 of 2)

	he flu — nausea,		nditions to		ch - cl	hille	}	THRESHOLD LIMIT VALUE 610°F - 9	ives off fluorine ga
	110 - 110000	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	acrie, apaer					PERMISSIBLE EXPOSURE LIMIT OTHER LIMIT	
								OTTER LIMIT	
DDIMARY DO	ITEC OF CHIEDY		-1	Chi- C	\	Other /en			
PRIMART HUI	JTES OF ENTRY	inn	ialation [SKIRC	ontac	ot Other (sp	ecity)		
EMERGENCY Oxygen	AND FIRST AID	PROC	CEDURES						
									
				_			ACTIVI	TY DATA	
STABILITY	UNSTABLE		CONDITI	ONS T	O AVC	DID	•		
STABLETT	STABLE	x							
INCOMPATIB	LITY (materials	to avo	id)						
HAZARDOUS	DECOMPOSITIO	ON PR	ODUCTS:						 ,
Fluorine gas.		MA	YOCCUR		x	CONDITIONS	TO AVOID		
HAZARDOUS POLYMERIZA	TION	WII	LL NOT OC	CUR					
					لل	Temperatures			
							LEAK	PROCEDURES	
STEPS TO BE	TAKEN IN CASE	E MAT	ERIAL IS R						
Nothing specia	ıf.			IELEAS	ED O	IR SPILLED			
Nothing specia	ıl.				ED O				
	OSAL METHOD				ED O				
	SAL METHOD			TELEAS	SED O	H SPILLED			
WASTE DISPO	DSAL METHOD edures.					H SPILLED			
WASTE DISPO	SAL METHOD	ABLE	QUÂNTITY			H SPILLED			
WASTE DISPO Standard proc CERCLA (Sup	DSAL METHOD edures.			Y (in lb:		H SPILLED			
WASTE DISPO Standard proc CERCLA (Sup RCRA HAZAR	OSAL METHOD edures. erfund) REPORT	O. (40) CFR 261.3	Y (in lb:	s)		lh/cal		
WASTE DISPO Standard proc CERCLA (Sup RCRA HAZAR	DSAL METHOD edures. erfund) REPORT DOUS WASTE N	O. (40) CFR 261.3	Y (in lbs	s) Theo	preticalI	lb/gal		
WASTE DISPOSITION OF THE PROPERTY OF THE PROPE	DSAL METHOD edures. erfund) REPORT DOUS WASTE N GANIC COMPO minus water)	UND (OCFR 261.3	Y (in lbs	Theo	pretical	/gal		
WASTE DISPO Standard proc CERCLA (Sup RCRA HAZAR VOLATILE OR (as packaged,	DSAL METHOD edures. erfund) REPORT DOUS WASTE N GANIC COMPO minus water)	0. (40 UND (VOC)	Y (in lbs	Theo	pretical	/gal	ON INFORMATION	
WASTE DISPO Standard proc CERCLA (Sup RCRA HAZAR VOLATILE OR (as packaged,	DSAL METHOD edures. erfund) REPORT DOUS WASTE N GANIC COMPO minus water) SECT	0. (40 UND (VOC)	Y (in lbs	Theo	pretical	/gal	ON INFORMATION	
WASTE DISPOSITION OF THE PROPERTY OF THE PROPE	DSAL METHOD edures. erfund) REPORT DOUS WASTE N GANIC COMPO minus water) SECT	0. (40 UND (VOC)	Y (in lbs	Theo	pretical	/gal	ON INFORMATION	
WASTE DISPOSITION OF THE PROPERTY OF THE PROPE	DSAL METHOD edures. erfund) REPORT DOUS WASTE N GANIC COMPO minus water) SECT	UND (VOC)	Y (in lbs	Theo Analy	pretical ytical CIAL PRO	/gal	ON INFORMATION SPECIAL	
WASTE DISPOSITION OF THE PROPERTY OF THE PROPE	erfund) REPORT DOUS WASTE N GANIC COMPO minus water) SECT	UND (VOC) N VIII off type) CAL EXHAI	Y (in 1b:	Theo Analy	oretical ytical DIAL PRO	/gal	SPECIAL	
WASTE DISPOSITION OF STANDARD	erfund) REPORT DOUS WASTE N GANIC COMPO minus water) SECT	UND (Special LO	VOC) N VIII Ify type) CAL EXHAI CHANICAL Inly in the exhaus	Y (in lbs	Theo Analy PEC	pretical ytical DIAL PRO	OTECT	SPECIAL	
WASTE DISPOSITION OF STANDARD	erfund) REPORT DOUS WASTE N GANIC COMPO minus water) SECT	UND (Special LO	VOC) N VIII Ify type) CAL EXHAI CHANICAL Inly in the exhaus	Y (in lbs	Theo Analy PEC	pretical ytical DIAL PRO	OTECT	SPECIAL OTHER DTECTION (specify type)	
WASTE DISPOSTANTAL DISPOSTANTA DISPOSTANTA DISPOSTANTA DISPOSTANTA DISPOSTANTA DISPOSTANTA DISPOSTANTA DISPOSTANTA DISPOST	DSAL METHOD edures. erfund) REPORT DOUS WASTE N GANIC COMPO minus water) SECT Y PROTECTION GLOVES (specif	LO ME Out type	VOC) N VIII Ify type) CAL EXHAI CHANICAL Inly in the exhaus	Y (in lbs	Theo Analy PEC	pretical ytical DIAL PRO	OTECT	SPECIAL OTHER DTECTION (specify type)	
WASTE DISPOSITION OF THE PROTECTIVE None needed	DSAL METHOD edures. erfund) REPORT DOUS WASTE N GANIC COMPO minus water) SECT Y PROTECTION GLOVES (specif	O. (40 UND (Special	VOC) N VIII Ify type) CAL EXHAL CHANICAL Inly in the ex	Y (in lbs	Theo Analy PEC	pretical ytical DIAL PRO rate) specify rate) 610°	EYE PRO	SPECIAL OTHER DTECTION (specify type) eded	
WASTE DISPOSTANTAL DISPOSTANTA DISPOSTANTA DISPOSTANTA DISPOSTANTA DISPOSTANTA DISPOSTANTA DISPOSTANTA DISPOSTANTA DISPOST	DSAL METHOD edures. erfund) REPORT DOUS WASTE N GANIC COMPO minus water) SECT Y PROTECTION GLOVES (specif	O. (40 UND (ID) (speci	VOC) N VIII Ify type) CAL EXHAL CHANICAL Inly in the exit	Y (in lbs	Theo Analy PEC	oretical ytical CIAL PRO rate) specify rate) 610°	EYE PRO	SPECIAL OTHER DTECTION (specify type)	
WASTE DISPOSTANTAL PROTECTIVE None required	DSAL METHOD edures. erfund) REPORT DOUS WASTE N GANIC COMPO minus water) SECT Y PROTECTION GLOVES (specif	O. (40 UND (Special LO) ME O O MENT	VOC) N VIII Ify type) CAL EXHAI CHANICAL Inly in the extension of the	Y (in lbs	Theo Analy PEC	oretical ytical CIAL PRO rate) specify rate) 610°	EYE PRO	SPECIAL OTHER DTECTION (specify type) eded	
WASTE DISPOSTANTAL PROTECTIVE None required	DSAL METHOD edures. erfund) REPORT DOUS WASTE N GANIC COMPO minus water) SECT Y PROTECTION GLOVES (specification) STO BE TAKEN	O. (40 UND (Special LO) ME O O MENT	VOC) N VIII Ify type) CAL EXHAI CHANICAL Inly in the extension of the	Y (in lbs	Theo Analy PEC	oretical ytical CIAL PRO rate) specify rate) 610°	EYE PRO	SPECIAL OTHER DTECTION (specify type) eded	

21463, 21464 (page 2 of 2)

BOWMAN DISTRIBUTION, BARNES GROUP INC 850 East 72nd Street, Cleveland, OH 44103 Emergency Telephone No. (216) 391-7200 1-15-88

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BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

SECTION I

PRODUCT NAME	BOWMAN PART NO.	4 - 4 0)
FORD DARK BLUE ENGINE ENAMEL PAINT	24760 (page 1	1 01 2)
SUPPLIER	EMERGENCY TELEPHONE NO).
Bowman Distribution, Barnes Group Inc.	(216) 391-7200	
ADDRESS	DATE	
850 East 72nd Street, Cleveland, OH 44103	4/30/86	
HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING NAME, HAZARDOUS Spray Paint, Consumer Commodity, ORM-D		
ADDITIONAL HAZARD CLASSES (as applicable)		
N.A.	· · · · · ·	
CHEMICAL FAMILY	FORMULA	
N.A.	X8285	

SECTION II - HAZARDOUS INGREDIENTS

CAS REGISTRY NO.	%W	%V	CHEMICAL NAME(S)		LV Mg/M³	Listed as a Carcinogen in NTP, IARC or OSHA 1910(z) (specify)
67-64-1	30-40		Acetone	750	1750	No
1330-20-7	5-10		Xylene	100	435	No
64-17-5	5-10		Ethyl Alcohol	1000	1900	No
123-42-2	5-10		Diacetone Alcohol	50	240	No
78-93-3	<5		Methyl Ethyl Ketone	200	590	No
-	23		Propellant: Propane/Isobutane			No

SECTION III - PHYSICAL DATA

BOILING POINT 133 °F	°C	SPECIFIC GRAVITY (H ₂ O = 1)	.90		
VAPOR PRESSURE 186 @°F _20_°C 区 mm Hg	☐ psi	PERCENT VOLATILE BY VOLUME (%)	85-90	PERCENT SOLID BY WEIGHT (%)	15-20
VAPOR DENSITY (AIR = 1)	N.A.	EVAPORATION RATE (= 1)	N.A.		
SOLUBILITY IN WATER	N.A.	pH =	N.A.		
APPEARANCE AND ODOR Paint, solvent odor.	······································			MATERIAL IS: LIQUID	-

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	method used	FLAMMABLE LIMITS	LEL	L UEL
	<u>18</u> °C		1.1	N.A.
EXTINGUISHING MEDIA				
Carbon Dioxide, Dry	Chemical, or Alcohol Foam			
SPECIAL FIRE FIGHTING	PROCEDURES			
Water spray may be in	neffective. Water may be used to	o cool closed containers to prevent p	ressure build-up and	possible autoignition or
explosion when expo	sed to extreme heat. If water is	used, fog nozzies are preferable.		
UNUSUAL FIRE AND EXP	LOSION HAZARDS			
Vapors are heavier th	an air and may travel along the	ground or may be moved by ventilat	ion and ignited by pil	ot lights, other flames,
sparks, heaters, smol	ing, electric motors or other lar	nition sources at locations distant fro	m material handling	point.

	ation of vapors			avoid al and respi	ratory irritation,	THRESH	IBLE EXPOSURE LIMIT
	ness, fatigue, n				consciousness, and	OTHERL	
en asphyxiati	ion.						
RIMARY ROU	TES OF ENTRY	/ Ini	halation 🔀	Skin Conta	oct Other (speci	y)	
MERGENCY /	AND FIRST AID	PRO	CEDURES			 	
					cult, administer oxy	en. If breathing ha	stopped, give artificial respiration.
ep person wa	erm, quiet and g	jet me	dical attent	ion.			
				-			
			SE	CTION	I VI - REAC	TIVITY DA	ATA
	UNSTABLE		CONDITI	ONS TO AV	OID		
TABILITY	STABLE	+					
COMPATIBIL	LITY (materials	X		rks and ope	n riame.		·
oid contact v	vith: strong oxid	ilzing	agents and	heat.			
AZARDOUS [. A .	DECOMPOSITIO	ON PE	RODUCTS:				
····		M	AY OCCUR		CONDITIONS TO	AVOID	
AZARDOUS OLYMERIZAT	ION	Wi	LL NOT OC	COR	N.A.		
JETWENIZAT				X	l . <u>.</u>	·	
	9	SEC	CTION	VII - S	SPILL OR I	EAK PRO	CEDURES
EPS TO BE	TAKEN IN CASI						
						and transfer to a clo	osed container. Eliminate all ignition sources.
-					•		
	SAL METHOD						
aterial collect							
	ed Oil Speci Dell	t mate	erial may be	deposited i	n a posted toxic sub	stance landfill in ac	cordance with local, state and federal regulation
	ed (iii absorbei)	t mate	erial may be	deposited i	n a posted toxic sub	stance landfill in ac	cordance with local, state and federal regulation
ERCLA (Supe	erfund) REPORT		<u> </u>	<u> </u>	n a posted toxic sub	stance landfill in ac	cordance with local, state and federal regulation
. A .	erfund) REPORT	TABLE	E QUANTIT	Y (in lbs)	n a posted toxic sub	stance landfill in ac	cordance with local, state and federal regulation
. A. CRA HAZARD		TABLE	E QUANTIT	Y (in lbs)	n a posted toxic sub	stance landfill in ac	cordance with local, state and federal regulation
.A. CRA HAZARD .A.	ortund) REPORT	TABLE	QUANTIT	Y (in lbs)			cordance with local, state and federal regulation
A. CRA HAZARD A. OLATILE ORG	orfund) REPORT	TABLE	QUANTIT	Y (in lbs)	n a posted toxic sub		cordance with local, state and federal regulation
A. CRA HAZARD A. CLATILE ORG	orfund) REPORT	TABLE	QUANTIT	Y (in lbs)		al	cordance with local, state and federal regulation
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BOWMAN DISTRIBUTION, BARNES GROUP INC. 850 East 72nd Street, Cleveland, OH 44103 Emergency Telephone No. (216) 391-7200

EUTECTIC CORPORATIONMATERIAL SAFETY DATA SHEET

CONFIDENTIAL

	SECTION I	
MANUFACTURER	EUTECTIC CORPORATION	EMERGENCY TELEPHONE NO. 212-358-4000
DORESS	40-40 172nd Street, Flushing,	New York 11358
ADE NAME	Form-A-Jig	
ODUCT		· · · · · · · · · · · · · · · · · · ·

SEC			RDOUS INGREDIENTS		
INGREDIENTS	*	★ TLV (Unite)	INGREDIENTS	%	TLV (Units
Asbestos	40-50	5fb/c	С		
Water	40-50		·		
Sodium Carbonate	5-10	TXDS	LD50 117mg/kg ipr-mus		
					1
					1
					 -
	- 				1
					1
	_	 	<u> </u>		

^{*}AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS - 1974

S	ECTION III - PHYSICAL DATA	
BOILING POINT (*F.)	SPECIFIC GRAVITY (H,O = 1)	1
VAPOR PRESSURE (mm Hg.)	PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	EVAPORATION RATE	
SOLUBILITY IN WATER		
APPEARANCE AND ODOR		

SECTION IV - FIRE	E AND EXPLOSION HAZARD D	ATA Not Ap	plicable
FLASH POINT (Method used)	FLAMMABLE LIMITS	Lei	Uel
EXTINGUISHING MEDIA			<u> </u>
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS		TR	W-01163

THIS FORM IS ESSENTIALLY SIMILAR TO U.S. DEPARTMENT OF LABOR LSB-00S-4

	THRESHOLD LIMIT VAL	UE				· · · · · · · · · · · · · · · · · · ·	1
}	maximum concentration of 10 airborne fibers 5 micrometers/cc of air.						
. [ELLECTS OF OVEHEXPOSURE						
) ¥	*Severe pulmonary disease. When worked in wet state, no danger of emission of						
SECTION V HEALTH HAZARD DATA							
528	airborne particles. EMERGENCY AND FIRST AID PROCEDURES						
38							
3	Remove to w	<u>ell-ventila</u>	ated a	irea.		· · · · · · · · · · · · · · · · · · ·	
=	064424			: e			
!!!	<u>obtain medi</u>	cal assista	ince i	if necessary.			
	STABILITY	1		CONDITIONS TO AVO	PID .		
		UNSTABLE					
,	1	 		 		·····	
		STABLE	χ	į			
- ¥	INCOMPATABILITY (Ma	lerials to avoid)					·
N.Y.							
SECTION VI	HAZARDOUS DECOMPO	SITION PRODUCTS					
SEAC		, 		Tanana ana an			
; ;	HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVO	, , , , , , , , , , , , , , , , , , ,		
		<u> </u>		 			
		WILL NOT OCCUR	X	1			•
<u> </u>	STEPS TO BE TAKEN IN	CASE MATERIAL IS		OR SPILLED			
	Replace into container if useableor dispose as indicated below.						
JES JES							
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₹Ö							
WASTE DISPOSAL METHOD Normal industrial waste procedure.							
; 233 134	WASTE DISPOSAL METHOD Normal industrial waste procedure.						
O	Normal indu	istrial was	te pro	ocedure.			
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•		· · · · · · · · · · · · · · · · · · ·					
	RESPIRATORY PROTEC	TION (Specify type)					
ATION		If c	onfine	ed area. use	air-suppl	ied type	
O W	VENTILATION	LOCAL EXHAUST				SPECIAL	
28				quired		OTHER	
## > 7		MECHANICAL (General)				OTHER	
SECTION VIH. SPEC	PROTECTIVE GLOVES	l use	<u>17 aya</u>	ailable	EYE PROTECTIO	N .	
55							
ĭ,₹	OTHER PROTECTIVE EQUIPMENT						
	Refer to AWS publicationANSI 749.1-1973Safety in Welding and Cutting. PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING						
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING						
SECTION IX SPECIAL PRECAUTIONS	Refer to ANSI Z49.1-1973 .						
205							
28.5							
	OTHER PRECAUTIONS						
	PROPER SHIPPING (Article) NAME DOT CLASSIFICATION						
≥ٍر	Prof. Cit. St. March 1997						
SECTION X TRANS. DATA	DOT LABEL	DOT MARKING	orm-A	-J10 [EMERGENCY ACCIDE	NT PRECAUTIONS	AND PROCEDURES	_
ECT!		1					
N. E.	DOT PLACARD	PRECAUTION	IS TO BE T	AKEN IN TRANSPORTA	TION		
1	1	1					

CHEMICÁL NAME

162



APPROVED

J. T. Baker Chemical Co., 222 Red School Lane, Phillipsburg, N.J. 088 1887

MATERIAL SAFETY DATA SHEET

ATHINKICARVICE **CHEMICAL NAME FORMULA** HCHO and polymers in solution Formaldehyde, Solution 50-00-0 SYNONYM OR CROSS REFERENCE : CAS NO: A854-9442 EPA NO: Formalin sacrifing In analysis the manager's MATERIAL NATURE OF HAZARD 37% Irritant Formaldehyde 13% Flammable Liquid Methanoi 50% Water **BOILING POINT MELTING POINT** 98°C (210°F) SPECIFIC GRAVITY VAPOR PRESSURE 1.110 at 25/25°C 1.0 mm Hg @200C PERCENT VOLATILE BY VOLUME (%) **VAPOR DENSITY (AIR=1)** 100 1.01 (Vapor over solution) WATER SOLUBILITY **EVAPORATION RATE** Complete Water **APPEARANCE** Colorless liquid, pungent odor. Savijeli T. W. T. T. D. ET TO TO Upper **FLAMMABLE LIMITS** Lower FLASH POINT (method used) 7.0 73.0 (HCHO) 185°F (tag closed cup) FIRE EXTINGUISHING Water spray, dry chemical, "alcohol" foam or carbon dioxide. SPECIAL FIRE-FIGHTING PROCEDURES Use water to keep fire-exposed containers cool. UNUSUAL FIRE AND EXPLOSION HAZARD şiğərlərin və İğələ Tələbizəridi TRW-01165 THRESHOLD LIMIT VALUE orl-rat LD_{EO}: 800 mg/kg **HEALTH HAZARDS** Vapors intensely irritating to mucous membranes. May be irritating to skin. Ingestion may cause savere abdominal pain, anuria, coma hematuria, death FIRST AID PROCEDURES If inhaled, remove to fresh air, Administer oxygen or artificial respiration if necessary. Call

a physician. If swallowed, immediately induce vomiting; repeat until vomit is clear. Then give milk or raw eggs. Call a physician. In case of contact, flush eyes and skin with plenty of water for at least 15 minutes while removing contaminated

clothing. Call a physician for eyes.

STABILITY	UNSTABLE	CONDITIONS TO AVOID
	STABLE X	Heat, sparks, and flame.
INCOMPATABILITY (mate	rials to avoid)	
		isulfides; salts of Cu, Fe and As; H ₂ O ₂ , iodine, potassium
permanganate.		
HAZARDOUS DECOMPO	SITION PRODUCTS	
Thermal decomposition may	produce carbon monoxide	and/or carbon dioxide.
HAZARDOUS	MAY OCCUR X	CONDITIONS TO AVOID
POLYMERIZATION	WILL NOT OCCUR	Avoid strong alkalies or mineral acids
	THE STATE OF	12 PM 14 SA
SPILLS	***	
Absorb <mark>spill on r</mark> ags, vermice	HITO OF OTHER SYSHAME SOME	otoing material.
	· · · · · · · · · · · · · · · · · · ·	
DISPOSAL		
Dissolve in a combustible so	lvent, then spray the solution	on into a furnace with after burner, providing local
environmental regulations p	ermit.	•
•		

*#. 19 Ber - 14 Ph	SECTION VIII. PRO	7 = 2 = 1
RESPIRATORY PROTECT	ION (specify type)	
Self-contained breathing app		
VENTILATION	LOCAL /4	SPECIAL
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	9	
	Prefera:	OTHER
		eneral) OŢHER
		eneral) OTHER
PROTECTIVE GLOVES		eneral) OTHER EYE PROTECTION
Rubber gloves.	MECHAI g	
Rubber gloves. OTHER PROTECTIVE EQ	MECHAI g	EYE PROTECTION
Rubber gloves. OTHER PROTECTIVE EQ	MECHAI g	EYE PROTECTION
Rubber gloves. OTHER PROTECTIVE ECAPProved working clothes;	MECHAI g	EYE PROTECTION Goggles; safety glasses.
Rubber gloves. OTHER PROTECTIVE ECApproved working clothes;	MECHAI g	EYE PROTECTION Goggles; safety glasses. on.
Rubber gloves. OTHER PROTECTIVE ECAPPROVED WORKING CLOTHER; STORAGE & HANDLING	MECHAN g	EYE PROTECTION Goggles; safety glasses. on.
Rubber gloves. OTHER PROTECTIVE ECAPPROVED WORKING Clothes; STORAGE & HANDLING Keep well closed in a moder	MECHAN PUIPMENT eye bath; rubber t ately warm place. Minimu	EYE PROTECTION Goggles; safety glasses. on.
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Rubber gloves. OTHER PROTECTIVE ECApproved working clothes; STORAGE & HANDLING Keep well closed in a moder range from 59-86°F (15-30°C) On standing, especially in the	MECHAN PUIPMENT eye bath; rubber t rately warm place. Minimu PC).	EYE PROTECTION Goggles; safety glasses. on. m storage temperatures to prevent polymerization

publications. It is the users responsibility to determine the suitability of this information for the adoption of safety precautions as necessary. We reserve the right to revise Material Safety Data Sheets from time as new technical information becomes available, user has the responsibility to contact the company to make sure that the sheet is the latest one issued.



MATERIAL SAFETY DATA SHEET

IDENTIFICATION

Name:

Freon® TFS Solvent

Synonyms:

Freon® TF/Nitromethane Freon® 113/Nitromethane FC-113/Nitromethane

CAS Name:

Ethane, 1,1,2-Trichloro-1,2,2-Trifluoro

Methane, Nitro

Manufacturer/Distributor:

E.I. du Pont de Nemours & Co. (Inc.)

Address:

Freon® Products Division Wilmington, DE 19800

PHYSICAL DATA

Boiling Point (°F): 115.1

Density: 1.535 g/cc @68°F

Vapor Density (Air=1): 6.4

pH Information: Neutral

Form: Liquid

Color: Colorless

HAZARDOUS COMPONENTS

Material(s): Trichlorotrifluoroethane

Nitromethane

HAZARDOUS REACTIVITY

Stability: Material is stable. However, avoid open flames and high temperatures.

unemical Family.

Halogenated Hydrocarbon and

Nitroparaffin

Formula: CCl₂FCClF₂/CH₃NO₂

(Azéotropé)

CAS Registry No.

76-13-1 75-52-5

Medical Emergency Phone:

(800) 441-3637

Transportation Emergency Phone:

CHEMTREC (800) 424-9300

Percent Volatile by volume: 100

Vapor Pressure: 264 mmHg @68°F

Solubility in H₂O:

Nitromethane 10% by wt.

Trichlorotrifluoroethane 0.01% by wt.

Evaporation Rate (CCl_A=1): 0.1

Appearance: Clear

Odor: Slight ethereal odor

approximate %:

2.7

The data in this Material Sefety Data Sheet relates only to the specific material designated series and deseries related by the process.

0908-2536



Incompatibility: Alkali or Alkaline earth metals - powdered Al, Zn, Be, etc.

Decomposition: This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids - possible carbonyl halides.

Polymerization: Will not occur

FIRE AND EVEN OCTOR DATA

Flash Point:

None

Method:

TOC

Autoignition Temperature:

Not determined

Flammable Limits in Air, % by Vol.

Lower: Nonflammable Upper: Nonflammable

Autodecomposition Temperature:

Not detained

Fire and Explosion:

Drums may rupture under fire conditions. Decomposition may occur.

Entinguishing Media:

Nonflammable

Special Fire Fighting Instructions:

Self-contained breathing apparatus (SCBA) may be required if drums rupture and contents are spilled under fire conditions.

HEALTH HAZARD INFORMATION

Principal Health Hazards:

Inhalation: Vapor is heavier than air and can cause suffocation by reducing oxygen available for breathing. Breathing high concentrations of vapor may cause light-headedness, giddiness, shortness of breath, and may lead to narcosis, cardiac irregularities, unconsciousness or death. Trichlorotrifluoroethane Lough Rats 52,000 ppm/4 hrs. Nitromethane Lough State 6,000 ppm/4 hrs.

Note: In screening studies with experimental animals, exposure to FC-113 at approximately 5,000 ppm (v/v) and above, followed by a large intraveneous epinephrine challenge, has induced serious cardiac irregularities.

Skin: Not a corrosive or irritant; however, liquid can cause defatting of tissue.

Eye: Liquid can cause discomfort and irritation; usually no extended effect

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oral: Although oral toxicity is low, [Trichlorotrifluoroethane - LD 50 Rat 43,000 mg/kg, Nitromethane - LD 50 Rat 1,210 mg/kg], ingestion of Freon® TFS solvent is to be avoided.

Exposure Limits:

PEL (OSHA): Trichlorotrifluoroethane 1000 ppm 100 ppm

Safety Precautions: Avoid breathing vapors and prolonged skin exposure. Use only in well ventilated area.

First Aid:

Inhalation: Remove to fresh air, call a physician. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Do not give epinephrine or similar drugs.

Note to Physicians: Recause of a possible increased risk of eliciting cardiac dysrythmias, catecholamine drugs, such as epinephrine, should be considered only as a last resort in life threatening emergencies.

Eve: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin. Flush with water. Get medical attention if irritation is present.

Oral: No specific intervention is indicated as the compound is not likely to be hazardous by ingestion. However, contact a physician if necessary. Do not induce vomiting as the hazard of aspirating the material into the lungs is a greater hazard than allowing it to progress through the intestinal tract.

Medical Conditions Possibly Aggravated by Exposure:

Cardiovascular Disease: See Principal Health Hazards: Inhalation section.

Other Health Hazards:

The components of Freon® TFS are not listed as carcinogens by IARC, NTP, and OSHA. Based on animal studies and human experiences this mixture poses no hazard to man relative to systemic toxicity, carcinogenicity, mutagenicity or teratogenicity when occupational exposures are below recommended exposure limits.

PROTECTION INFORMATION

Generally Acceptable Control Measures:

Normal ventilation for standard manufacturing procedures is generally adequate. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low places.



Butyl gloves should be used to avoid prolonged or repeated exposure. Chemical splash goggles should be available for use as needed to prevent eye contact. Under normal manufacturing conditions no respiratory profession is required when using this product. Self-contained breathing apparatus (SCBA) is required if a large spill occurs.

DISPOSAL INFORMATION

Spill, Leak or Release: Ventilate area. Do not flush to sewers. Dike spill. Collect on absorbent material and transfer to steel drums or recovery or disposal. Comply with federal, state, and local regulations on reporting releases.

Waste Disposal: Comply with federal, state, and local regulations. Kemove to a permitted waste disposal facility. EPA Hazardous Waste Nos. F001 and F002 may apply to waste materials.

SHIPPING INFORMATION

Domestic - Other than Air (DOT)

Proper shipping name

Not regulated

international Water or Air (IACO/ICAO)

Proper shipping name

Not regulated

Other Information

Shipping Containers

Drums, tank trucks, tank cars

Storage Conditions

Clean, dry area. Do not heat above 125°F

Date Revised: 10/85

Person responsible: T. D. Armstrong, C&P Dept., Freon® Products Lab.,

Chestnut Run, Bldg. 711, Wilmington, DE 19898

(302) 999-3847 or (302) 999-4338.

E-77772-1

F2.12

0908-2539 **UPD**

TRW-01170